

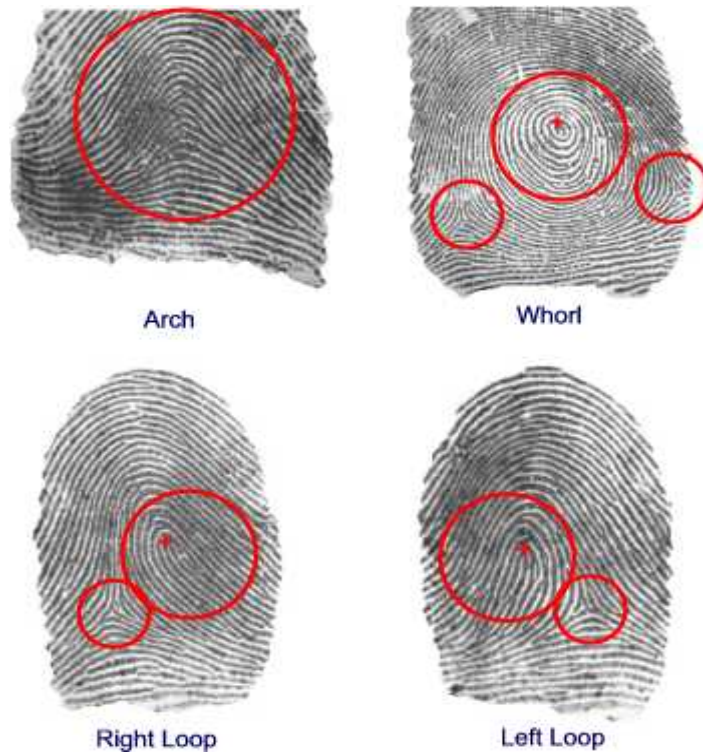
# ***FINGERPRINTS AND PRINT PATTERNS***

Fingerprints are found on all people and some animals. They are unique to the individual and remain unchanged over a lifetime. The pattern of ridges on the friction skin of the fingers, palms, toes, sole of the foot are formed *in utero* by about 5 months. Even identical twins have different fingerprints. Fingerprint configurations are probably determined by multiple genes.

On the top of the ridges are pores that allow sweat and or oil to exit from glands. Fingerprints are left by the transfer of oil or amino acids to a surface, substances on the fingers like paint or blood, or by leaving a print in a soft substrate. Prints that can't be readily seen on a surface are called latent and must be visualized by various methods.

Fresh prints are visualized using very fine aluminum powders. Ninhydrin can be used to color the amino acids. More recently, cyanoacrylate has been used to develop prints on metal or plastic items and laser detection can cause dyed prints to fluoresce. In the US, experts are used to decide if fingerprints match. Examiners identify prints by making comparisons of one friction ridge print with another. Modern computerized fingerprint analysis allows the process to be automated and speeds up searching for a match.

## The Groups



### Schematic view of Groups

**Arch:** The ridges form on one side and tend to go through to the other side of the finger.

**Whorl:** The ridges tend to present a concentric pattern, spiraled, ovoid or sinusoid, all on the center of the finger image.

**Right Loops:** The ridges flow from the right of the observer, curve at the center of the fingerprint and tend to go back to the same side.

**Left Loops:** The ridges flow from the left of the observer, curve at the center of the fingerprint and tend to go back to the same side.

Frequency of Patterns in People:

60% have loops

30% have whorls

10% have arches

